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PROCEEDINGS  
OF  
THE ROYAL SOCIETY.

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1830-1831.

No. 5.

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May 5.

HIS ROYAL HIGHNESS THE DUKE OF SUSSEX, K.G.,  
President, in the Chair.

Charles James Beverly, Esq. was elected a Fellow of the Society.

The following Presents were received, and thanks ordered for them :—

Notices of the Proceedings of the Geological Society. No. 20. 8vo.  
—*Presented by the Society.*

The Philosophical Magazine. No. 53. 8vo.—*The Editors.*

The National Portrait Gallery. No. 25. 8vo.—*The Proprietors.*

Researches principally relative to the morbid and curative Effects  
of Loss of Blood. By Marshall Hall, M.D. 8vo.—*The Author.*

Proposal of a Plan for the investigation of the due administration  
of Blood-Letting. By the same. 8vo.—*The Author.*

On Astronomy, the Magnet, Tides, &c., with engraved Illustrations.  
By Thomas Hedgcock, R.N. 8vo.—*The Author.*

A paper was read, “ On the effect of Water, raised to Temperatures moderately higher than that of the Atmosphere, upon Batrachian Reptiles.” By Marshall Hall, M.D., &c.

Dr. Edwards had found, by a series of experiments, that the batrachian reptiles, when immersed in hot water, live for a shorter time in proportion as the temperature of the water is higher; and that at  $108^{\circ}$  of Fahrenheit they die almost instantaneously. The author of the present paper observes, that the extinction of life in these cases is owing to a cause of a more immediately destructive agency than the mere suspension of respiration: he finds that if only the head of the animal is placed under water of  $120^{\circ}$ , the animal struggles, but soon ceases to move; but if the spine as well as the limbs be immersed, convulsions supervene, and the muscles become rigid: in both cases the action of the heart continues. If one of the limbs, which after the extinction of sensibility still remains flexible, be separated from the body, and placed in water of  $120^{\circ}$ , its muscles contract and become rigid; this effect taking place first in the superficial, and next

in the deep seated muscles. When the nerve, separated from the other parts, was alone placed in hot water, the muscles were not affected: and when the muscles had been made to contract by hot water, they were no longer capable of being affected by irritations applied to the nerve. The heart removed from the body, and placed in hot water, gradually contracted and remained rigid. Hence the author concludes that the death of the animal, when occasioned by the sudden application of heat to the surface, is not owing to asphyxia, but to a positive agency, destroying the functions of the nervous and muscular systems; the muscles of involuntary motion being affected in like manner with those of voluntary motion.

A paper was read, entitled an "Account of a new mode of propelling Vessels." By Mr. Wm. Hale. Communicated by Richard Penn, Esq. F.R.S.

The author ascribes the want of success which has hitherto attended all attempts to propel vessels by a discharge of water from the stern, to the injudicious plan of the apparatus employed, and not to any defect in the principle itself: for he considers that the reaction upon the vessel from which a volume of water is thrown, depends in no degree on the resistance it meets with from the medium into which it is ejected, but simply upon the momentum given to the mass. The author proposes to accomplish the object of propelling water by means of an instrument having the form of an eccentric curve, resembling the spiral of Archimedes, made to revolve on an axis. The resistance offered to the water in which it is immersed results from the different distances of the two ends of the spiral propeller from the axis. This propeller acts in a box having also a somewhat spiral form, and the space between the two ends of the spiral, after describing one turn, is open to allow of the exit of the water driven out by the propeller. The bottom of the box has a circular aperture, of which the radius is equal to the distance of the shorter end of the propeller from the axis. The water within this circle meets with no resistance until it arrives at the line joining the two extremities of the propeller, when it is immediately acted upon by the eccentric curved surface of the propeller.

A paper was read, entitled, "Additional thoughts on the use of the Ganglions in furnishing Electricity for the production of Animal Secretions." By Sir Everard Home, Bart., F.R.S.

The author considering animal heat as depending on the ganglions, infers from the analogy of the structure of the abdominal ganglia with the electrical organs of fishes, that animal heat arises from the electricity supplied by these ganglions.